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EURASIP Journal on Advances in Signal Processing

Special Issue on Compressive Sensing for Speech and Audio Signal Processing

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Compressive sensing or sampling (CS) has become one of the most exciting areas of research in information theory, communication and signal processing. It has wide applications in the intersection of many science and engineering disciplines concerned with extracting useful information content embedded in a sparse signal and compressing it into a small amount of data before storage or transmission. The CS theory allows for recovering certain signals, where the signal is sparse or compressible in a certain domain, from much fewer samples than traditional methods do. Moreover, numerical optimization can be adopted to reconstruct the full-length signal from the small amount of collected data. Therefore, CS as a very efficient signal acquisition protocol has already been used to process many practical signals, such as image and video, that possess the sparse property in a transform domain of the signal like the Fourier or wavelet domain. However, most of the works on CS in sparse signal processing published thus far has been focused on image and video signals, and much fewer results have been disclosed on the applicability of CS to speech and audio signals. Perhaps, the application of CS to speech and audio is not as straightforward as to image and video considering that the generation of speech involves a variety of production mechanisms emphasizing different characteristics of the signal at different times. The domain where the sparsity of speech and audio can be exploited as well as the degree of sparsity is not yet clear. The perceptual properties of the reconstructed acoustic signals and the computational constraints are also important issues for a practical application due to the intensive computation of the CS formulation.

This special issue aims to report latest advances in application of CS to speech and audio signals. The special issue will constitute a vehicle whereby researchers in compressive sensing and signal processing can present and share their ideas on how compressive sensing can be applied to solve various problems in speech and audio signals. The topics to be covered include, but not limited to:

- Sampling and reconstruction of sparse speech and audio signals
- CS methods for acoustic modelling and feature extraction
- CS methods for sparse linear-prediction coding
- CS in speech enhancement
- CS in robust speech recognition
- CS in speaker identification and verification
- CS in microphone array processing

Submission Schedule

- ► Manuscript Due: March 1, 2012
- ► First Round of Reviews: June 1, 2012
- ► Publication Date: September 1, 2012

Submission Instructions:

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